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Donald Jafrey

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EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

1746

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/980,956

Applicant(s)

JAFREY, DONALD

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-13, 15-20, 22, 23 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15, 16, 22, 23 and 27-29 is/are allowed.
- 6) ☒ Claim(s) 2-12, 17, 18, 20, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 13 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 2-13, 15-20, 22, 23, and 25-29. Claims 15, 16, 22, 23, and 27-29 are allowed and claims 13 and 19 are objected to as containing allowable subject matter. The rejections over the Badwal and DE '832 references have been obviated but claims 2-10, 20, 25, and 26 remain rejected for the reasons of record over the Reznikov reference. Claims 11, 12, 17, and 18 are newly rejected under 35 USC 103 as necessitated by amendment. Accordingly, this action is made final.

Claim Rejections - 35 USC § 103

2. Claims 2-7, 20, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reznikov (U.S. Patent 5,232,792) in view of WO 97/35349.

Reznikov is directed to a solid oxide fuel cell (see col. 4, line 63) comprising a separator plate having a stainless steel substrate and a nickel or copper layer thereon facing the anode (see col. 5, line 30).

The reference does not expressly teach that the copper may be alloyed with nickel as recited in claims 4 and 26.

However, it is submitted that the use of such an alloy would have been obvious to a person of ordinary skill in the art. Both nickel and copper are disclosed as useful for the anode-

facing layer. The courts have held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. *In re Kerkhoven*, 205 USPQ 1069 (CCPA 1980).

The reference further does not expressly teach a “protective layer” on the anode side of the copper layer as recited in claim 25.

WO ‘349 is directed to an interconnect device having a chromium-containing substrate and an oxidation-resistant coating on the anode side. The coating comprises two layers, the outer layer comprising Ni or a noble metal and the intermediate layer comprising Nb, Ta, Ag, or alloys thereof (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the oxidation resistant coating of WO ‘349 on the anode side of the separator of Reznikov. The artisan would be motivated to do this in order to prevent oxidation of the copper layer of Reznikov. As such, the anode-side “protective layer” recited in claim 25 would be rendered obvious to the skilled artisan.

Regarding claim 20, which recites a series of three layers forming the protective layer, the disclosure of WO ‘349 would be sufficient to render this subject matter obvious. Claim 20 differs from WO ‘349 in that the claim recites a silver layer between the Nb layer and the Ni outer layer. However, WO ‘349 discloses that its intermediate layer contains Nb, Ta, Ag, or alloys thereof. It would be obvious to separate the single intermediate layer of WO ‘349 into two

layers, thereby reading on the claim language. As such, claim 20 would also be rendered obvious.

3. Claims 8-12, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reznikov in view of WO '349 as applied to claims 2-7, 20, 25, and 26 above, and further in view of WO 99/13522.

Reznikov does not expressly teach that the steel layer comprises a cathode-side alumina layer thereon, as recited in the instant claims.

WO '522 is directed to a fuel cell interconnector. As set forth on page 6, line 6 et seq., the reference teaches that the main body of the interconnector is made of a heat-resisting steel comprising aluminum in a high enough amount to form alumina on the surface of the steel at cell operating conditions, or is coated with a protective coating of alumina.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the heat-resistant steel of WO '522 as the steel layer of Reznikov, or to coat the steel layer of Reznikov with a layer of alumina. At page 6, line 12, WO '522 discloses that this treatment renders the surface impervious to oxygen and chromium-oxide based gases. As such, the artisan would be motivated to use the heat-resistant steel of WO '522 as the steel layer of Reznikov, or to coat the steel layer of Reznikov with a layer of alumina to achieve oxidation resistance.

Response to Arguments

4. Applicant's arguments filed April 19, 2006 have been fully considered but they are not persuasive. Applicant states that "there is no teaching or suggestion to modify or use Reznikov in a internally reformed solid oxide fuel cell system because the gas separator of Reznikov is not in fact suitable for such applications." In response, it is first noted that the instant claims do not recite an "internally reformed" system, so this issue is not seen as germane to the outstanding rejection. Furthermore, Reznikov does in fact teach such an internally reformed fuel cell in column 5, line 7.

Applicant further states with respect to Reznikov that "one skilled in the art would not be motivated to modify Reznikov by adding a protective layer to prevent oxidation of the nickel or copper layer because oxidation of copper (or nickel) on the anode side (i.e., fuel side) of a solid oxide fuel cell is not an issue -- it does not occur. In contrast, the present invention calls for an oxidation resistant material on the cathode side (i.e., air side)." This argument is well-taken; however, it is submitted that the secondary reference, WO '349, expressly teaches that oxidation occurs on the anode side of a solid oxide fuel cell separator. The function of the anode-side layers of WO '349 is not simply to prevent oxidation, it is also to prevent chromium and nickel diffusion (page 5 of WO '349). Thus, the artisan would have several reasons to use the layers of WO '349 on the anode side of the separator of Reznikov. As such, the outstanding rejection is believed to be proper.

Allowable Subject Matter

5. Claims 15, 16, 22, 23, and 27-29 are allowed.
6. Claims 13 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

Regarding dependent claims 13 and 19, these claims recite that an aluminum coating is at least partly diffused into a cathode and anode-side surface portion of the layer of copper prior to being oxidized. The closest prior art, Reznikov and WO '522, do not teach or fairly suggest these limitations.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1746
May 4, 2006